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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/816,346	03/26/2001	Laurent Desclos	A7831	6357

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WASHINGTON, DC 20037-3213

EXAMINER

NGUYEN, DUC M

ART UNIT	PAPER NUMBER
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2685

DATE MAILED: 04/15/2004 8

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/816,346

Applicant(s)

DESCLOS, LAURENT

Examiner

Duc M. Nguyen

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on 17 March 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 24-31 is/are pending in the application.
- 4a) Of the above claim(s) 1-23 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 24-29 and 31 is/are rejected.
- 7) ☒ Claim(s) 30 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 5.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

This action is in response to applicant's response filed on 3/24/04. Claims 1-31 are now pending in the present application.

Election/Restrictions

1. Applicant's election without traverse of group IV (claims 24-31) in Paper No. 7 is acknowledged. Accordingly, Claims 1-23 withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to nonelected inventions. An action for Group IV (claims 24-31) follows.

Information Disclosure Statement

2. The references listed in the information disclosure statements submitted on 12/27/01 has been considered by the examiner (see attached PTO-1449).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims **24-25** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Kennan** (US 5,649,312).

Regarding claim **24**, **Kennan** discloses a mixer circuit comprising :

- mixing means for mixing first input f1 and second input f2 to produce a sum and different frequency output signal (see Fig. 4 and col. 1, lines 52-56), wherein it is clear that the mixer would produce a mixing means as claimed (see col. 2, lines 62-65);
- an active load comprising a FET (see Fig. 4 and col. 1, lines 52-56), wherein it is clear that such active load comprises a FET similar to the amplifier FET 62 of Fig. 2 (see col. 3, lines 33-34).

Here, although Kennan is silent on the variable load, it is clear that such FET would obviously act as a variable load for the mixer according to the operating point of the FET (I-V curve). Therefore, the claimed limitations are made obvious by Kennan for providing a mixer as claimed, for providing a stable mixer bias voltage.

Regarding claim **25**, the claim is rejected for the same reason as set forth in claim 24 above. In addition, it would have been obvious to one skill in the art to use a MOSFET for the transistor as claimed, for utilizing advantages of MOSFET such as cost.

4. Claims **26-27** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Flood et al** (US 5,563,612).

Regarding claim **26**, **Flood** discloses a doubler comprising a doubling means for outputting an output frequency which is double of an input frequency and a bypass-switch (see Figs. 1-2) and col. 6, lines 28-39). Here, although Flood is silent on a FET transistor, it is noted that using a diode or a FET as a switch is well known in the art.

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Therefore, it would have been obvious to one skill in the art at the time the invention was made to modify Flood for using a FET as a switch as claimed, so that the switch can be implemented in monolithic microwave integrated circuit (MMIC) for cost saving.

Regarding claim **27**, the claim is rejected for the same reason as set forth in claim 24 above. In addition, it would have been obvious to one skill in the art to use a MOSFET as claimed, for utilizing advantages of MOSFET such as cost.

5. Claim **28** is rejected under 35 U.S.C. 103(a) as being unpatentable over **Broderick** (US 5,170,500) in view of **Tanji** (US 6,198,352) and **Kennan**.

Regarding claim **28**, **Broderick** discloses a transceiver comprising

- a first amplifier (see Fig. 2, ref. 21);
- a first mixer (see Fig. 2, ref. 22), wherein it is clear that the mixer would inherently produce sum and difference frequency signals as claimed;
- a first IF amplifier (see Fig. 2, ref. 24).

Here, although **Broderick** is silence on an input matching and an output matching for the amplifier, it is noted that such matching impedances for the amplifier is well known in the art as disclosed by **Tanji** (see col. 2, lines 1-15), for stability purpose due to impedance matching. Further, although **Broderick** is silence on an active load for the mixer, it is noted that using such active load is known in the art as disclosed by **Kennan** (see Fig. 4 and col. 1, lines 52-56), for providing a stable mixer bias voltage. Therefore, it would have been obvious to one skill in the art at the time the invention was made to incorporate the above teachings of **Tanji** and **Kennan** to **Broderick**, for

providing active matching as claimed in order to prevent instability caused by impedance mismatch, and for providing an active (variable) load as claimed, for stabilizing mixer bias voltage, to improve the performance of the transceiver.

6. Claims **29, 31** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Broderick** in view of **Tanji** and **Kennan** and further in view of **Yamaguchi et al** (5,930,695).

Regarding claim **31**, **Broderick** as modified would disclose all the claimed limitations, see claim 28 above, except for a limiter. However, **Yamaguch** discloses a receiver which comprises several stage limiters prior to mixer for preventing saturation of the mixer (see Fig. 7, col. 4, line 39 – col. 5, line 14), whereas it is clear that the limiter would obviously comprise active load means for providing a variable load (see transistors in Fig. 11 and col. 5, line 56 – col. 6, line 48) as claimed in order to limit output voltage according to the curve as shown in Fig. 12. Therefore, it would have been obvious to one skill in the art at the time the invention was made to incorporate the above teaching of Yamaguchi to Tanji, Kennan and Broderick, for providing limiters prior to mixer for preventing saturation of the mixer, thereby improving the performance of the transceiver.

Regarding claim **29**, the claim is rejected for the same reason as set forth in claim 31 above. In addition, since **Broderick** discloses a transceiver, and since the transmitter of the transceiver can be implemented as a reverse process of the receiver (which comprises a second IF amplifier, a second amplifier, a second limiter and a

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second mixer), it would have been obvious to one skill in the art at the time the invention was made to further modify the above teachings of Yamaguchi, Tanji, Kennan and Broderick, for providing a transceiver with a transmitter as claimed, so that the fabrication of the transmitter and receiver of a transceiver can be simplified due to their symmetrical or common components of the transmitter and the receiver, for cost reduction.

Allowable Subject Matter

7. Claim 30 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

8. The following is a statement of reasons for the indication of allowable subject matter:

As to claim 30, the cited prior art fails to disclose or make it obvious a transceiver which comprises components as specified in the claim, and whereas the reference signal inputting to the first and second mixers is outputted from a buffer amplifier and a doubler with a bypass switch as specified in the claim.

Conclusion

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- **Apel** (US 5,826,183), Circuit for simultaneous frequency doubler and mixers.

- **Hopwood** et al (US 3,993,962), Low noise parametric varactor diode crystal oscillator.

10. **Any response to this action should be mailed to:**

Commissioner of Patents and Trademarks
Washington, D.C. 20231

or faxed to:

(703) 872-9314 (for formal communications intended for entry)

(for informal or draft communications, please label "PROPOSED" or "DRAFT")

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington VA, Sixth Floor (Receptionist).

Any inquiry concerning this communication or communications from the examiner should be directed to Duc M. Nguyen whose telephone number is (703) 306-4531, Monday-Thursday (9:00 AM - 5:00 PM). Or to Edward Urban (Supervisor) whose telephone number is (703) 305-4385.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone number is (703) 305-4700.

Duc M. Nguyen

Apr 12, 2004

